

PROVIDENCE SEWAGE TREATMENT SYSTEM,  
Fields Point Plant, Sludge Press House  
Ernest Street  
Providence  
Providence County  
Rhode Island

HAER No. RI-20-H

HAER  
RI  
4-PROV,  
191H-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
Mid-Atlantic Region  
Department of the Interior  
Philadelphia, Pennsylvania 19106

HAER  
RI  
4-PROV,  
191H-

HISTORIC AMERICAN ENGINEERING RECORD  
PROVIDENCE SEWAGE TREATMENT SYSTEM:  
Fields Point Plant, Sludge Press House

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LOCATION: East end of Ernest Street, Providence,  
Providence County, Rhode Island  
UTM: 19.301430.4629520  
Quad: Providence, RI

DATE OF CONSTRUCTION: 1899-1901

ENGINEER: Otis F. Clapp

PRESENT OWNER: Narragansett Bay Commission  
44 Washington Street, Providence, RI

PRESENT USE: Houses vacuum filters for dewatering of  
sludge.

SIGNIFICANCE: The Sludge Press House was one of three  
buildings constructed in 1899-1900  
during the original development of  
Fields Point for the treatment of sewage  
by the chemical precipitation process.  
The building was designed to contain the  
machinery by which sludge was dewatered  
prior to removal and disposal, and as  
such represented the last important step  
in the treatment process.

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FIELDS POINT PLANT, SLUDGE PRESS HOUSE  
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DESCRIPTION:

The Sludge Press House (also known as the Filter Building) is sited toward the center of the Fields Point sewage treatment plant operated by the Narragansett Bay Commission in Providence. The building is two stories high, with exterior dimensions of approximately 138' by 51'. Foundations and floors are of concrete, exterior walls are of red brick, and the composition-shingled hipped roof (originally slate-covered) is carried on steel trusses.

The west, south and east elevations are symmetrically arranged, with vertical bays of varying width set off with brick piers that rise the full height of the walls, where their caps form part of the narrow corbelled cornice. The walls are extensively pierced with segmentally-arched openings; most of these (where not filled in) are variously fitted with 6/6 double hung sash (first story) and taller 6/6 sash with transom panels that occur singly, and in pairs and triples (second story). Single leaf doors on the south elevation mark employee entrances. On the west end are two wider vehicular entries, originally fitted with double-leaf doors, now with corrugated metal overhead roll doors.

The interior of the building is divided into two areas. The eastern third is set off from the remainder by a full-height concrete block wall. Within, the first floor is used for electrical equipment and storage areas. The second floor contains a locker room, shower, and small office.

The remaining two-thirds of the interior contains two levels, the upper unpartitioned and open to the rafters. The concrete floor of this level is carried on I-beams, supporting shallow brick arches. On this level are two Eimco cloth vacuum filters and one large Kimline-Sanderson coil vacuum filter which dewater sludge prior to incineration. The lower level is divided longitudinally (east-west), by concrete walls with round-arched openings, into three aisles or corridors, the center aisle being set some 11 feet below the others. The north aisle contains plunger pumps (which pump sludge to the filters), the south aisle a city water line and boiler. The middle aisle is partitioned into several sections which contain sump pumps.

The sludge press house is in deteriorated condition, and has experienced a variety of physical, as well as functional, alterations since its completion in 1901. Many window openings have been filled in, doors replaced, and the central bay of the

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south elevation reconstructed. In 1959 this bay was opened in order to move the large coil vacuum filter into the building. At the same time, the second floor in the west end was strengthened with steel beams. The east end of the building, which originally housed air compressors, was set off by a full-height brick wall, pierced with pairs of tall windows at the second floor level. The upper portion of this wall has been removed, and a new full height concrete block wall erected further to the east. Five large rectangular skylights positioned on the north slope of the building's roof, are now boarded over. No original equipment remains, the original mechanical presses having been replaced in 1947-49 and again between 1959 and 1963. Five concrete sludge reservoirs, which were positioned outside the building against the north wall, were remodeled in 1947-49 and have since been removed.

HISTORICAL INFORMATION:

The Sludge Press House was built in 1899-1901 as an integral component of the first sewage treatment facility at Fields Point, which was put into operation in April, 1901. The Sludge Press House has experienced almost total "mechanical" alteration, as well as a variety of physical changes. However, the exterior design intent remains readily appreciable, and the general configuration of the interior as originally built can still be discerned. It is one of two remaining structures at the facility that can be directly associated with the original design and construction of Fields Point.

The Sludge Press House has historically performed an important role in the processing and treatment of sewage at Fields Point. Its role occurred at the end of the process in which solids in sewage were settled out by passing through settling tanks or clarifiers, having been treated to convert organic solids to a stable, mineralized form, then "dewatered" in mechanical presses to remove remaining liquid and to facilitate removal and disposal. Designs for the Sludge Press House were generated in 1899-1900 in the office of the Providence City Engineer, then under Otis F. Clapp. The character of the structural shell appears to have been modeled on that of late 19th century mill buildings in Providence, as evidenced by the brick pier construction which permitted insertion of large window expanses in each bay, and the use of the segmental arch to more effectively distribute the load to the piers.

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Within the basic shell, the interior was subdivided both vertically and horizontally in a manner specific to the intended function. In the original process, sludge settled out from precipitation tanks was conveyed via subterranean channels to a sludge well, located outside the southeast corner of the Sludge Press House. From the sludge well, the sludge passed into the ejector well, located within the southeast corner-of the building, within the partitioned-off east end. Also in this area were the ejector well and two motor driven air compressors. One of these provided compressed air to the ejectors (cast-iron pipes with inlet and outlet pipes) which forced sludge from the ejector well up to the concrete sludge reservoirs outside the north wall of the building. From these reservoirs, the sludge was introduced back into the building, into forcing receivers located in a concrete pit some 11 feet below the ground floor (in what is now the "center aisle"). Compressed air provided by the second of the two compressors forced the sludge into 16 mechanical sludge presses, located in two parallel rows on the second level. In the presses, the sludge liquid was removed, and the remaining solids shaped into flat, square "cakes". These cakes were dropped out of the presses into small steel cars, which moved in and out of the ground level (along the north and south aisles) on rails through two doorways in the west wall, and by this means carried away for disposal.

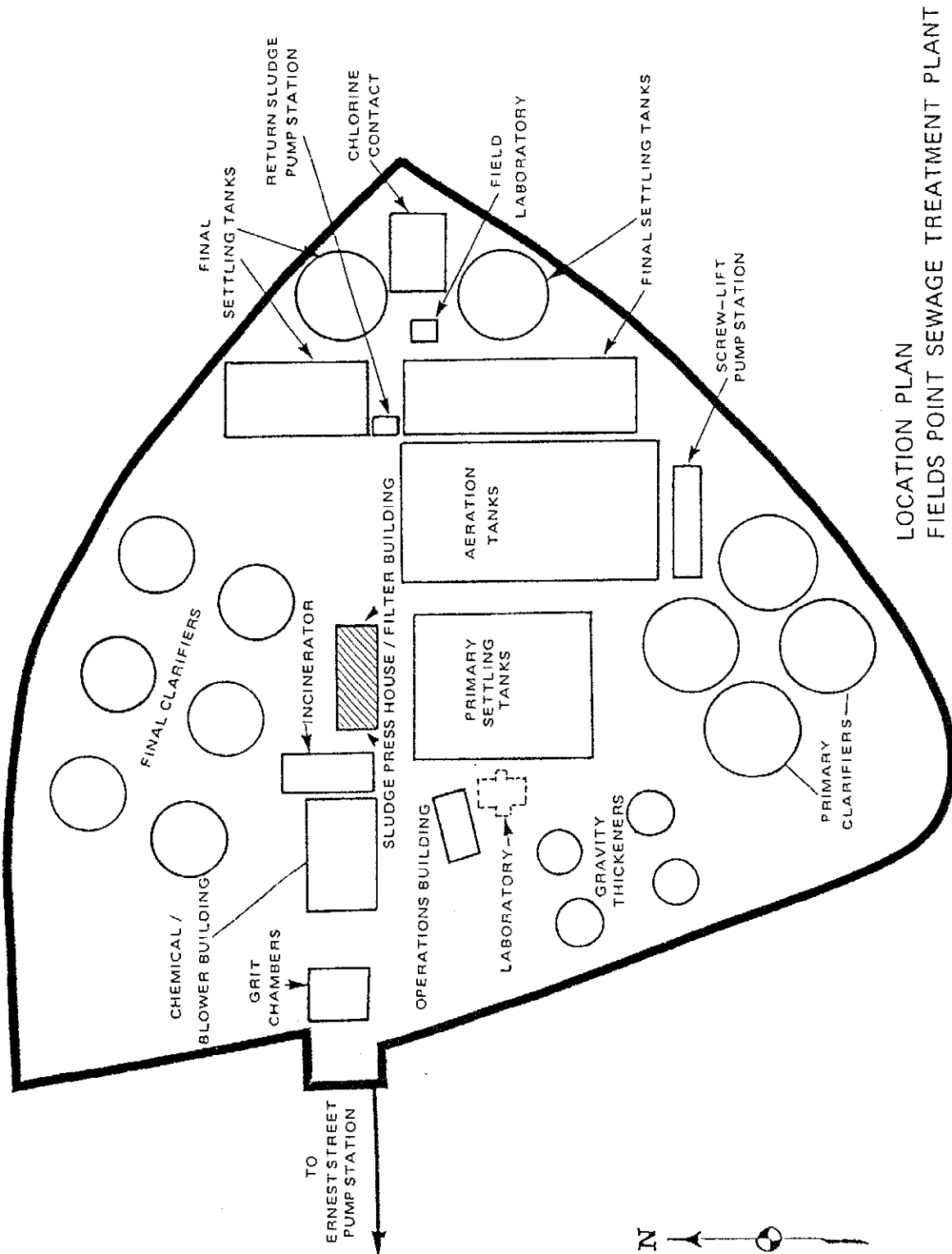
When the original filter presses were replaced between 1947 and 1949, so was the rail car system. A multiple-hearth incinerator was constructed directly west of the Sludge Press House, to which sludge from the new vacuum filters was carried by means of a conveyor system. This system remains in use, although the 1940's presses were later replaced with newer models.

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LOCATION PLAN  
FIELDS POINT SEWAGE TREATMENT PLANT